FIVE-YEAR REVIEW
PRISTINE, INC.

I. Introduction

Purpose

The United States Environmental Protection Agency (U.S. EPA) has conducted this five-year review for the Pristine, Inc. Superfund site pursuant to CERCLA section 121(c) and NCP section 300.430(f)(4)(ii). The purpose of the five-year review is to ensure that the remedy remains protective of human health and the environment and is functioning as designed. The Pristine five-year review is being completed as a statutory requirement. This Type Ia five-year review will become part of the Site File.

Site Characteristics

The Pristine, Inc. site is located in an industrial/residential area within Reading, Ohio and is a former liquid waste disposal facility that operated from 1974 to 1981. Prior to 1974, the site had been used in the manufacturing of sulfuric acid and fertilizer. In 1977, Pristine, Inc. obtained a permit to incinerate liquid waste on-site and Pristine, Inc. accepted both bulk and drummed waste. The site was closed in 1981 due to numerous permit violations and at the time of closure, more than 10,000 drums and several hundred thousand gallons of bulk liquids were on-site. Some of the chemicals of concern include the following:

- Pesticides such as DDT, aldrin and dieldrin
- Volatile Organic Compounds such as 1,2 dichloroethane, methylene chloride, chloroform, benzene and trichloroethane.
- Semi-volatile organic compounds such as polynuclear aromatic hydrocarbons and phenol.
- Metals such as arsenic, cadmium and chromium.

In 1983, a Consent Order between the Ohio EPA and Pristine, Inc. was used to remove most of the drummed material. In 1984, an Administrative Order on Consent between the U.S. EPA and some of the responsible parties required the removal of sludges and highly contaminated soil from the site. In the fall of 1985, the U.S. EPA funded a Remedial Investigation/Feasibility Study (RI/FS) for the site. The results from the RI/FS showed contamination of on-site soil and groundwater. Performance goals were developed for soil and groundwater based upon a cumulative carcinogenic risk of 1 x 10-6.

A Record of Decision (ROD) was signed on December 31, 1987 and addressed both contaminated soil and groundwater. The selected remedy consisted of the following components:

- Demolition, decontamination and removal of all on-site structures.
- Excavation and on-site consolidation of 1,725 cubic yards of sediment and soil.
- In-situ vitrification of contaminated soil to an average depth of ten feet across the site.
- Installation of a groundwater pump and treatment with a recommendation for using air stripping to reduce VOC concentration in the extracted groundwater from the lower aquifer. To further delineate the contamination within the lower aquifer, a groundwater investigation is required prior to groundwater pump and treatment.
- Access and deed restrictions, and groundwater monitoring.

In November 1987, more than 130 PRPs were notified of their liability at the Pristine site and invited to negotiate with the U.S. EPA for the design and construction of the final remedy. Negotiations with the PRPs ended on March 29, 1988 without an agreement. On March 31, 1988, the PRPs proposed to use in-situ soil vapor extraction (ISVE) instead of in-situ vitrification claiming equivalent performance. The proposal was reviewed and it was determined that ISVE would treat the volatile organic compounds but not the pesticides and PAHs in the soil. The U.S. EPA agreed to reopen negotiations if the PRPs included thermal treatment (incineration) with ISVE to treat the soil, and maintain the groundwater pump and treatment system as described in the December 1987 ROD using the same cleanup standards for both groundwater and soil. The negotiations were reopened and an agreement through a Consent Decree, including a DeMinimis settlement was reached between 111 PRPs and U.S. EPA. The ROD Amendment was executed on March 30, 1990, after the Consent Decree was lodged in December 1989. The Consent Decree was entered by the Southern District Court of Ohio on October 23, 1990.

The March 30, 1990, ROD Amendment changed the soil component portion of the remedy to the following:

- On-site incineration of the top one foot of soil across the site and all other soils from the present ground surface to four feet below ground surface that contain semi-volatile organic compounds, and pesticides in excess of soil performance goals. In addition, on-site incineration of sediments and, if necessary, soils surrounding the Magic Pit will occur. The Magic Pit is a concrete lined pit which was used by Pristine to store and treat hazardous materials on-site. Incinerator residues will be placed back on the site under the RCRA multimedia cap if it meets the substantive RCRA delisting criteria. An ESD dated July 30, 1993 changed the thermal treatment from incineration to thermal desorption.

- In-situ soil vapor extraction of on-site soil to a depth of approximately 12 feet below original ground surface over most of the site. In the Magic Pit area, the ISVE system would be at greater depth. The in-situ soil vapor extraction system will be used to dewater the upper aquifer. The extracted air and upper aquifer water from the ISVE system will be treated on-site using granular activated carbon. A RCRA Subtitle D compliant cap is also required over the three-acre Site.

The City of Reading well field which supplied municipal to more than 15,000 people was located 300 feet northwest of the site. In March 1994, the City of Reading well field was closed due to contamination. The City of Reading's municipal water is now supplied by the City of Cincinnati.

A second DeMinimis settlement was signed between U.S. EPA and 8 responsible parties in February 1993.

II. Discussion of Remedial Objectives

The remedy for the Pristine site has been divided into four phases. Phase 1 is the demolition phase and was completed in January 1992. During the demolition, a large portion of the metal from the facility was decontaminated and recycled. Debris from the facility demolition was disposed off-site based upon testing results in either a U.S. EPA approved hazardous or non-hazardous landfill.

The second phase of remediation consisted of thermal treatment of soil by thermal desorption technology. Approximately 13,000 tons of contaminated soil was treated and placed back on-site. The treated soil was delisted prior to on-site placement. Extensive compliance testing occurred during the operation of the thermal desorption unit and compliance was maintained throughout the life of the project. The thermal desorption was completed in May 1994.

Construction of phase three of the Pristine cleanup was completed in November 1995 and included the installation of an in-situ soil vapor extraction (ISVE) system and cap. The ISVE system contains a series of trenches and wells to remediate both the soil and groundwater in the upper zones of the site. The ISVE system will remove approximately 10 gallons per minute (gpm) of groundwater and 1000 cubic feet per minute of soil gas for subsequent treatment. Startup of the ISVE system has occurred but full operation will commence when the 150 gpm lower aquifer groundwater pump and treatment system is completed since the process equipment is shared. The ISVE system is scheduled to operate for 10 years.

The final phase of the Pristine site cleanup is treatment of groundwater from the lower aquifer. An extensive lower aquifer investigation was required to delineate the contamination within the lower aquifer. Two groundwater pump and treatment systems are planned with one operating at 150 gpm treating groundwater on-site and near off-site and another system operating at

approximately 500 gpm for off-site groundwater. The 150 gpm system is under construction and is scheduled for startup in the fall of 1997. The treatment train for the groundwater consists of metals precipitation, air stripping and carbon adsorption. The off-gas from the air stripper is treated by a catalytic oxidizer. The 500 gpm system is in the design phase and at a minimum will consist of metals precipitation and air stripping. Construction completion is scheduled for the summer 1998.

III. Recommendations

Since the construction is not completed for the lower aquifer groundwater pump and treatment, the major recommendation is to complete the construction of both the 150 gpm and 500 gpm groundwater pump and treatment systems. Through a Proposed Plan to be issued in the summer of 1997, the U.S. EPA will be requesting public comments on adding a natural attenuation component to the site remedy to address portions of the plume where active groundwater cleanup may not be practical due to large volumes of groundwater and low levels of contamination.

IV. Statement on Protectiveness

With the continued implementation of the remedial action pursuant to the ROD, as amended, and the Consent Decree, and if the groundwater pump and treatment system is implemented as planned, the remedy selected for this Site remains protective of human health and the environment.

V. Next Five-year Review

The next five-year review will be conducted in August 2001.

Wm. E. Muno 5/28/97

William E. Muno, Director Date
Superfund Division